

KOMBAROV, V.M. (Donetsk)

Technical conference of foresters. Put' i put. khoz. 9 no.12:  
37-38 '65. (MIRA 19:1)

KOMBAROV, V.M., inzh.

Bureau for economic analysis. Put' 1 put khoz. 8 no.5:  
13-14 My '64. (MIRA 17:6)

1. Debal'tsevskaia distantziya Donetskoy dorogi.

KOMBAROV, V.M.

Don't tolerate the plundering of ties. Put' i put.khoz. 8 no.4:45  
'64. (MIRA 17:4)

PAVLOV, B.K., inzh.; KOMBAROV, V.M., inzh.

In the track maintenance section. Put' 1 put. khoz. 9 no.2:10-11  
'65. (MIRA 18:7)

1. Nachal'nik uchastka puti, stantsiya Serpukhov, Moskovskoy dorogi  
(for Pavlov). 2. Stantsiya Serpukhov, Moskovskoy dorogi (for Kombarov).

KOMBAROV, V.M.

Activities of the foremost workers. Put' 1 put.khoz. 9 no.8322 '65.  
(MIRA 1828)

1. Stantsiya Darnitsa, Yugo-Zapadnoy dorogi.

KOMBAROV, V.M.inzh.

Striving to achieve excellent track maintenance on every kilometer.  
Put' i put.khoz. 7 no.8:5-7 '63. (MIRA 16:9)

1. Stantsiya Bolotnaya, Zapadno--Sibirskoy dorogi.  
(Siberia, Western--Railroads--Maintenance and repair)  
(Socialist competition)

KOMBAROV, V. M., inzh.

New antiseptic paste. Put' 1 put. khov. 6 no.8:38 '62.  
(MIRA 15:10)

(Railroads—Ties) (Wood—Preservation)





SULA, I.; KOMBERCOVA, A.

New vaccine against tuberculosis; experience with vaccination of adults. Cas. lek. cesk. 90 no.39:1150-1155 28 Sept 1951. (CML 21:2)

1. Department of Research and Diagnosis of Tuberculosis, Division of Microbiology and Epidemiology, of the State Institute of Health in Prague.

Komberova, H.

SULA, L.;KOMBERCOVA, A.

New tuberculosis vaccine. I. Results of vaccination of youth.  
Med. dosw. mikrob., Warsz. 4 no. 1:25-38 Jan-Mar 1952. (CIML 22:4)

1. Of the Tuberculosis Research and Diagnostic Department of  
Microbiological and Epidemiological Branch of State Health Institute,  
Warsaw-Praga III.

ACC NR: AR6035291

SOURCE CODE: UR/0209/66/000/009/0045/0045

AUTHOR: Kardashev, N. S.; Komberg, B. V.

TITLE: Dependence of the continuous optical spectrum of quasars on their red shift

SOURCE: Ref. zh. Astronomiya, Abs. 9.51.387

REF SOURCE: Astron. tsirkulyar, no. 357, fevr. 25, 1966, 1-5

TOPIC TAGS: optic spectrum, continuous spectrum, quasar optic spectrum, quasar continuous spectrum, quasar red shift

ABSTRACT: On the basis of three-color photometry (UBV) of a series of quasistellar objects, the dependence of "curvature"  $\Delta = a_1 - a_2$  (where  $a_1$  and  $a_2$  are the spectral indexes of, respectively, UB and BV-rays) on the value of the red shift  $z$  of these objects has been calculated. From the dependence obtained it follows that in the region  $\lambda_0 = (2250 \pm 150) \text{ \AA}$ , quasar spectra have a "step" of absorption. The occurrence of the "step" may be due to a matter with a wide absorption band (starting near  $\lambda \approx 2250$ ) which is distributed either in the

Card 1/2

UDC: 523.164.4

ACC NR: AR6035291

vicinity of radiation sources, or in the intergalactic space. This matter may be interstellar dust as, according to certain data, it has an anomalous absorption with a maximum near  $\lambda 2300$ . However, as yet there is no definite answer as to the nature of the absorbing matter. With the existence of more materials on the identification and photometry of quasars, it becomes possible to ascertain with greater accuracy the dependence of  $\Delta$  on  $z$ . By means of this dependence it is possible to estimate the red-shift of unidentified objects on the basis of UBV data. It also makes it possible to calculate the retardation parameter. Preliminary estimates of  $z$  were made for seven unidentified quasars. The direct detection of absorption "steps" requires a thorough photometric investigation of the spectra of quasistellar sources near  $\lambda$ . A bibliography of 7 titles is included. V. Zaytsev. [Translation of abstract] [DW]

SUB CODE: 03/

Card 2/2

APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000824110014-0"

CATEGORY : Microbiology

ABS. JOUR. : Ref Zhur-Biologiya, No. 4, 1959, No. 14881

AUTHOR : Kombiyesko, Meytert  
INST. :

TITLE : Frequency of Biochemical Types among Phage Types (Typhoid bacillus) Isolated in Rumanian People's Republic.

ORIG. PUB. : Zh. gigiyeny, epidemiol., mikrobiol. i immunol., 1957, 1, No.3, 285-291

ABSTRACT : No abstract

CARD:

1/1

TUCEK, Josef; KOMBEREC, Jiri

The education of scientists in physics. Pokroky mat fyz  
astr 8 no.1:25-27 '63.

KOMBIESKU,

ROUMANIA/Microbiology - Medical and Veterinary Microbiology

F-4

Abs Jour : Referat Zhurn - Biol. No 16, 25 Aug 1957, 68599

Author : Kombiesku, Kombiesku, Vledoyanu

Title : Vaccination in Intestinal Diseases. Experimental Investigation. Introduction of Vaccine by Different Methods.

Orig Pub : Studii so cercetari inframicrobiol., microbiol. si parazit. Acad. RPR, 1956, 7, No 1-2, 131-136

Abstract : Mice were vaccinated by heat-killed Salmonella typhimurium which were injected hypodermically (100 million organisms) and orally (6 billion organisms) or by both methods. Better results were obtained in mixed vaccinations (thrice orally and one hypodermic injection after 30 days). Poorer results were obtained when the order of mixed vaccination was reversed. The vaccination did not produce satisfactory results when the oral method alone was used.

Card 1/1

- 61 -

KOMPIESKU, K.

"Distribution of phagotypes in Rumania."

Report submitted at the 13th All-Union Congress of Hygienists,  
Epidemiologists and Infectionists. 1959

TSINTSEVICH, V.M.; KOMCHENKO, G.P.; VOVCHENKO, G.D.

Electrochemical reduction of butyne-1,4-diol on a platinum electrode-catalyst. Elektrokimiia 1 no.8:928-932 Ag '65. (MIRA 18:9)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.



KOMCZ, M.; KONGZ, L.

Ultrashort-wave ceramic electron tubes. p. 51.

MAGYAR HIRADASTECHINKA. (Hiradastechnikai Tudományos Egyesület) Budapest, Hungary. Vol. 10, no. 2, Apr. 1959.

Monthly List of European Accessions (EAI) LC, Vol. 8, no. 7, July 1959.  
Uncl.

DOBK, M.; KOMCZYNSKI, L.; RUDNICKA, M.; SUSZKO, K.; TRZEBNY, W.;  
WOJCIECHOWSKA, M.

The influence of isonicotinic acid hydrazide upon experimental  
tuberculosis in guinea-pigs. Bull. Soc. amis sc. Poznan, ser. C  
No.4:65-78 1954.

1. Institute of Microbiology of the Medical Academy of Poznan.  
(NICOTINIC ACID ISOMERS, effects,  
isoniazid on exper. tuberc.)  
(TUBERCULOSIS, experimental,  
eff. of isoniazid)

Card 1/1

POLAND/General Problems of Pathology - Tumors. Comparison  
Oncology. Human Neoplasms.

U

Abs Jour : Ref Zhur Biol., No 1, 1959, 4263  
Author : Chlebowski, J., Komczynski, L., Zablocka, I.  
Inst : -  
Title : Primary Erythroblastosis.  
Orig Pub : Polskie arch. med. wewnetrz, 1957, 27, No 4, 533-540

Abstract : A brief survey of the section of the pathogenetic main  
points and clinical classification of erythroblastosis,  
and also a description of a case of subacute erythro-  
blastotic myelosis in a patient 62 years old. The  
disease lasted 4 months. Only mature erythroblasts were  
found in the peripheral blood; young forms appeared  
only during the terminal period. Also unusual was the  
gradual decrease of the number of myeloid elements with  
the development of a granulocytosis. -- F.L. Mayzil'

Card 1/1

Z II Kliniki Chorob Wewnetrznych A. M. im J. Marchlewskiego w  
Białymstoku. Kierownik: prof dr. med. J. Chlebowski  
Pat. A. M. im J. Marchlewskiego

BORON, Piotr; KOMCZYNSKI, Ludwik; RUTKOWSKI, Alfons

Intrahepatic biliary stasis in the light of clinical observations, biopsy studies and enzymological tests in viral hepatitis patients. Pol. tyg. lek. 18 no.42:1551-1556 14 0'63.

1. Z Kliniki Chorob Zakaźnych AM w Białymstoku (kierownik: doc.dr. med. P.Boron) i z Zakładu Anatomii Patologicznej AMB (kierownik: prof.dr.med. L.Komczynski).

\*

KOMOZYNSKI, Ludwik; REJNIAK, Leopold

Behavior of the vaginal mucosa in rabbits under the influence of aqueous solutions of polyethylene glycol. Preliminary communication on studies of trichomoniasis. Pat.polska 10 no.3:317-324 '59.

1. 3 Zakładu Anatomii Patologicznej A.M. w Białymstoku. Kierownik:  
doc.dr Ludwik Komczyński.

(GLYCOLS pharmacol.)

(POLYETHYLENES pharmacol.)

(VAGINA pharmacol.)

KOMCZYNSKI, Ludwik; OMULECKI, Mieczyslaw

Primary cancer of the frontal sinus. Otolaryngologia 13 no.3/4:  
631-636 '59.

1. Z Zakładu Anatomii Patologicznej A.M. w Białymstoku. Kierownik: doc.dr med. L. Komczyński i z Kliniki Otolaryngologicznej A.M. w Białymstoku. Kierownik: doc.dr med. W. Hassmann.  
(FRONTAL SINUS neopl.)

KOMCZYNSKI, Ludwik; KURASZ, Stanislaw

Relation to arteriosclerosis to the age and sex according to autopsy data of the Institute of Pathological Anatomy of the Academy of Medicine in Bialystok collected during the period of 1952-1959. Pat. pol. 13 no.3:317-324 '62.

1. Z Zakladu Anatomii Patologicznej AM w Bialymstoku. Kierownik: prof. dr med. L. Komczynski.

(ARTERIOSCLEROSIS)

KOMCZYNSKI, Ludwik; KURASZ, Stanislaw

Relation of arteriosclerosis to some chronic diseases, statistical studies. Pat. pol. 13 no.3:305-315 '62.

1. Z Zakładu Anatomii Patologicznej AM w Białymstoku. Kierownik: prof. dr med. L. Komczynski.

(ARTERIOSCLEROSIS)

(CHRONIC DISEASE)

VYRYPAYEV, A.; KOMECH, I.; NIKOLAYCHIK, N.

Serious shortcomings in the work of the central committee of  
the trade union of the petroleum industry workers. Sov.prof-  
soluzy 4 no.1:41-45 Ja '56. (MLRA 9:4)  
(Mukhanovo--Trade unions)



KOMECH, I.

Signs of new developments. Sov. profsoiuzy 6 no.4:56-60 Ap '58.

(MIRA 11:5)

(Vladimir--Tractor industry)

(Vladimir--Trade unions)

KOMECH, I. (Tadzhikistanya SSR)

Committee without the activist group is as a falcon without wings.  
Sov. profsoyuz 19 no.10:12-13 My '63. (MIRA 16:7)

1. Spetsial'nyy korrespondent zhurnala "Sovetskiye profsoyuz".  
(Tajikistan--Trade unions--Officers)

SHCHERBAK, M.; KOMECH, I.; TAL', R.; BABENKO, P.

Letters and correspondence. Sov.profsoiuzy 7 no.9:35-36 My '61.  
(MIRA 14:4)

1. Chlen rabkorporovskogo posta zhurnala "Sovetskiye profsoyuzy" (for Shcherbak). 2. Presdsedatel' raykoma profsoyuza rabotnikov kul'tury, g.Kakhovka (for Babenko).

(Nezhin—Agricultural machinery industry)  
(Zhitomir—Employees, Dismissal of)

BABUSHKIN, Vladimir Ivanovich; MCHEDLOV-PETROSYAN, Otar Petrovich;  
KOME DANT, K.P., red.; YEREMINA, I.A., tekhn. red.

[Silicate water-resistant elements] Silikatnye vodostoiki  
izdeliia. Kiev, Gosstroizdat, USSR, 1962. 98 p.

(MIRA 16:2)

(Sand--Lime products)

KOMELEVA, Galina Nikolayevna; GLINKA, V.M., red.; GREYDLIN, Yu.S.,  
khudosh,-tekhn.red.

[Views of St. Petersburg and its environs, 1821-1826] Vidy  
S.-Peterburga i okrestnostei, 1821-1826. Litografirovannoe  
izdanie Obshchestva pooshchreniia khudozhestv. Leningrad,  
Izd-vo Gos.Ermitazha, 1960. 41 p. (MIRA 13:4)  
(Leningrad--Views)

KOMEL'KOV, A.; MARKIN, B., starshiy master

Improving educational equipment and facilities. Prof.-tekh.obr.  
17 no.3:26 Mr '60. (MIRA 13:6)

1. Zamestitel' direktora tekhnicheskogo uchilishcha No.10, g.Brest.  
(Brest--Vocational education)

PETROV, A., преподаvatel'; STAVINSKIY, Ch.; KOMEL'KOV, A.; KULINSKIY, V.

Editor's mail. Prof.-tekhn. obr. 19 no.10:27 0 '62.

(MIRA 15:11)

1. Uchilishcha mekhanizatsii sel'skogo khozyaystva No.1 Tyumenskaya oblast' (for Petrof). 2. Starshiy inzhener-mekhanik Zhitomirskogo oblastnogo upravleniya (for Stavinskiy). 3. Zamestitel' direktora po uchebno-proizvodstvennoy rabote gorodskogo professional'no-tekhnicheskogo uchilishcha No.27, Brest (for Komel'kov). 4. Ispolnyayushchiy obyazannosti direktora gorodskogo uchilishcha mekhanizatsii sel'skogo khozyaystva No.9 Khmel'nitskoy oblasti (for Kulinskiy).

(Vocational education)

KOMEL'KOV, V.S.

186

537.523.4 -- 82

An investigation of impulse spark discharges.

I. The question of leader velocities. KOMEL'KOV.

V. S. J. Techn. Phys., U.S.S.R., 17, 10, pp. 1426-

1433, 1940. Abstr. in Wireless Engr, 19, p. 523,

Nov., 1942.—In damped impulse spark discharges, a

leader and a main channel in the discharge has been

observed. A detailed experimental investigation was

undertaken by the author, in which the discharge

between 2 needles was studied for a negatively

polarized incident wave (1/300  $\mu$ s).

E. R. A.



1ST AND 2ND ORDER										3RD AND 4TH ORDER									
PROCESSES AND PROPERTIES INDEX																			
<div style="border: 1px solid black; padding: 5px; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center; font-size: 2em; font-weight: bold;">CA</div>		<div style="float: right; font-size: 2em; font-weight: bold; margin-bottom: 10px;">2</div> <p>Dielectric breakdown of liquids. V. S. Kuzel'kov (G. M. Krutshanovskiy Power Inst., Acad. Sci. U.S.S.R.). <i>Comp. rend. acad. sci. U.R.S.S.</i> 47, 268-70; <i>Doklady Akad. Nauk S.S.S.R.</i> 47, 260-72 (1943).--The breakdown mechanism of transformer oil and distil. water were studied by passing a high-voltage discharge between electrodes inserted in the liquids and observing the results photographically and on an oscillograph. The breakdown cannot be interpreted on the basis of existent theories that ignore the part played by the electron-avalanche process. From the similarity between the esp. discharge phases in liquids and gases it is supposed that in liquids effects forcing this process (electron avalanche) arise on breakdown in spite of differences in conditions of electron movement in the liquid (high probability of stepwise ionization, energy loss by excitation of elastic at. vibrations in the mol., adhesions of electrons, etc.). These effects may consist of the photolionization due to radiation of the discharge itself and the decrease of work of ionization under action of the elec. field on the mols. of the liquid, which propagates along with the leader.</p> <p style="text-align: right;">H. G. McCann</p>																	
<div style="border: 1px solid black; padding: 5px; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center; font-size: 2em; font-weight: bold;">CB</div>		<div style="border: 1px solid black; padding: 5px; width: 100%; height: 100%;"> <div style="display: flex; justify-content: space-between; font-weight: bold;"> <span>ASB. SLA METALLURGICAL LITERATURE CLASSIFICATION</span> <span>1943-1944</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>1943-1944</span> <span>1945-1946</span> </div> </div>																	

SA

B 64  
1  
1618

621.316.729 : 621.317.333.8 - 83  
Synchronization of impulse circuits by means of slowed down spark discharge.  
Komelkov, V. G. Elektrichestvo (No. 2) 75-6 (Feb., 1946) In Russian. -  
Successive switching of h.v. pulses is relatively easy for very short  
delays (0.3-1 $\mu$  sec) by means of spark gaps or photo-relay, and for long  
delays over 0.1 sec by means of mechanical contactors. For the  
intermediate range of 1-100 $\mu$  sec a new and simple technique is proposed,  
employing a slowed down spark discharge through a high series resistor.  
A great advantage is the rapid voltage rise in the final stage of the  
discharge when the leader changes into reverse discharge. A typical case,  
using a generator of 600 kV for insulator test, is described briefly, and  
some curves are given. The charging resistor was 10 $\Omega$ . A. L.

ASB-35A METALLURGICAL LITERATURE CLASSIFICATION

13000 57101010A

13000 57101010A

13000 57101010A

1. KOMEL'KOV, V... NOVATSKIY, B.
2. USSR (600)
4. Lightning Conductors
7. How to protect collective farm buildings from strokes of lightning. Sel'.stroi. 2  
no.5 1947
9. Monthly List of Russian Accessions. Library of Congress. March 1953. Unclassified.

KOMEL'KOV, V. S.

"A study of spark discharge", by Candidate of Technical Sciences V. S. Komel'kov,  
at the Power Engr. Inst. im KRZHIZHANOVSKIY of the Acad. Sce. USSR.

SO: Elektrichestvo, No 5, Moscow, May 1947 (U-5533)

KIMEL KOU, V.S.



KOMEL'KOV, V. S.

Dec 48

USSR/Meteorology - Atmospheric Electricity

"Distribution of Electrical Charges in Clouds,"

V. S. Komel'kov

"Meteorol i Gidrol" No 6, pp 17-27

Describes experiments made in summers of 1941 and 1942 in which captive balloons were used to lift metal cables to considerable heights and corona currents flowing in these cables were measured. Also observed type clouds, time of beginning and end of precipitation, etc. Found cumulus clouds

170T77

Dec 48

USSR/Meteorology - Atmospheric Electricity  
(Contd)

without precipitation are characteristically unipolar, while clouds carrying precipitation have bipolar structure at their base. Submitted 15 Jul 48.

PA 170T77

170T77

KOMEL'KOV, V. S.

2

① Geo

Meteorological Abst.  
Vol. 4 No. 6  
June 1953  
Miscellaneous  
Applications

4.6-244 ✓ 551.594.21  
Komel'kov, V. S., Raspredezenie elektricheskikh zaryadov v oblakakh. [Distribution  
of electric charges in clouds.] *Meteorologiya i Gidrologiya*, No. 8:17-, Aug. 1948. LAC—  
The author presents a report on measurements of corona currents, carried out in 1941 and  
1942 by means of the ascent of captive balloons with a metallic cable. *Subject Heading:*  
1. Thunderstorm electricity.—C.K.



101 AND 102 CODES		PROCESS AND PROPERTY CODE		103 AND 104 CODES	
5A		KOMEL'KOV, V. S.		A 55	0
		537.521.7			
<p>336. The development of electrical discharge in long gaps. V. S. Komel'kov. Izv. Akad. Nauk, SSSR, Otdel Tekhn. Nauk, No. 6, 651-65 (June, 1950) in Russian.</p> <p>In this study of the "leader" stage of discharge Meek's theory of discharge as modified by Sapor and Bruce is reviewed critically. The dimensions of leader channels and potential gradients and current densities in them are determined from photographs and oscillograms. The leader channel (which has the properties of an arc channel) is surrounded by an ionized region which consists of streamers of low luminosity. The charge carried into the gap by the leader is mainly concentrated in the space surrounding the leader. This observation calls for amendment of existing theories of main discharge. A qualitative mechanism of leader development is suggested. Leader discharge in lightning is considered to be a retarded process in which ionization is periodically weakened and a screening space charge is formed. As the channel potential steadily increases the leader develops again. An expression is given relating the average velocity of the leader to the current in it.</p> <p style="text-align: right;">W. R. Stoker</p> <p>Power Eng. Inst. im. Krzhizhanovskiy, Acad. Sci. USSR</p>					
<p>A55-53A METALLURGICAL LITERATURE CLASSIFICATION</p>					
101 AND 102 CODES		PROCESS AND PROPERTY CODE		103 AND 104 CODES	
101 AND 102 CODES		PROCESS AND PROPERTY CODE		103 AND 104 CODES	

CLASSIFICATION		PROCESSING AND PROPERTIES INDEX	
SA	517 523 4		
<p>7114. Influence of barriers on the development of the electric discharge in long gaps. <i>N. S. Babinovskiy, A. M. Litvinov. Izv. Akad. Nauk, SSSR, Otdel. Tekh. Nauk (No. 10) 1461-74 (1958) in Russian.</i></p> <p>Investigation of retarded impulsive discharges in long gaps of the types point-plane and point-point with a barrier inserted showed that space charges accumulating on the barrier and in the ionization zone change the trajectory of the discharge, reinforce its stepped character and draw out its period of development. A barrier placed between positive point and plane inhibits flashover and produces incomplete discharge of characteristic form: streamers reach the barrier without penetrating it; leaders have a stepped character, and do not reach the barrier, but travel in different directions 2-3 cm above it; branches of leaders may attain lengths 2 to 3 times the distance between point and barrier. Discharge is incomplete owing to space charge set up by streamers and distorting original field, the direction of the maximum gradients no longer coinciding with the shortest distance between the electrodes. Probability of flashover is determined by processes between point and barrier, not between barrier and plane. Breakdown takes place if the leader penetrates the barrier. The influence of the barrier results then in retardation of discharge and increase of its stepped character. The development period is thus prolonged. The curves of duration of discharge v. position of barrier are similar to those obtained by other workers for breakdown voltages v. barrier position. In a negative point-plane discharge the barrier produces considerable increase of stepped character and of duration of discharge. In a point-point gap a discharge similar to that between a point of the corresponding polarity and a plane develops from each of the points.</p>		<p>140 and 174 edges</p>	
<p>ASB-SEA METALLURGICAL LITERATURE CLASSIFICATION</p>		<p>REGION 506100</p>	
<p>REGION 51702110</p>		<p>REGION 506100</p>	

STEKOLNIKOV, I. S.; KOMELKOV, V. S.; BOGOMOLOV, A. F.; LIKHACHEV, F. A.; BORISOV, V. N.;  
LOPSHITS, L. M.

Grozozashita Promyshlennykh Sooruzhenii i Zdanii (Lightning Protection of  
Industrial Structures and Buildings), 202 p., Publ. House of the AS USSR, Moscow,  
1951.

KOMAL'KOV, V. S.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

<u>Name</u>	<u>Title of Work</u>	<u>Nominated by</u>
Stekol'nokov, I. S.	"Lighting Protection of Industrial Structures and Buildings"	Power Engineering Institute Imeni G. M. Krzhizhanovskiy, Academy of Sciences USSR
Komal'kov, V. S.		
Bogomolov, A. F.		
Likhachev, F. A.		
Borisov, V. N.		
Lopshin, L. N.		

SO: W-30604, 7 July 1954

KOMEL'KOV, V.S.; SURNIN, B.P.

High-speed shutter for photographing electric bursts.  
Prib. i tekhn. eksp. no.1:78-80 J1-Ag '56.

(MLRA 10:2)

(Shutters, Photographic) (Electric discharges)

SUBJECT USSR / PHYSICS  
 AUTHOR KOMEL'KOV, V.S., ARETOV, G.N.  
 TITLE The Production of High Pulslike Amperages.  
 PERIODICAL Dokl.Akad.Nauk 110, fasc.4, 559 - 561 (1956)  
 Issued: 12 / 1956

CARD 1 / 2

PA - 1638

The highest hitherto known amperages attained by battery discharges amount to 500 - 470 ka, and the greatest transconductance amounted to  $(0,9 - 2,5) \cdot 10^{11}$  amp/sec. On the occasion of a discharge over a load with small  $L_n$  and  $R_b$  (self-induction and resistance) the two values mentioned can be exceeded considerably if the inductivity of all elements of the device ( i.e.  $L_k$  of the condensers,  $L_s$  of the rails (?) and  $L_d$  of the discharger) is considerably diminished. For the total inductivity of the circuit consisting of n condensers it holds that  $L_o = L_s + L_d + L_b + L_k/n$ . For the attainment of extreme amperages ( $L_b \rightarrow 0$ ) all other terms of this sum are of importance. For the reduction of  $L_s$  and  $L_d$  new types of rails (?) and dischargers are necessary. The most simple way of diminishing  $L_s$  is by means of compact and plane rails and by keeping the distance between the rails as small as possible. For this purpose solid insulators are necessary in addition to those on the periphery of the circuit. In the case of the circuit described here rubber- and viniplast insulators were used for an operating voltage of 50kv. If the best dielectrics are used (fluorplast, lausan) it will be sufficient for insulators to have a thickness of ~1 mm. In that case  $L_s$

Komet'kov, V.S.

4592 WEIGEN DISCHARGE IN LIQUID PHASE  
Dokl. Akad. Nauk SSSR, Vol. 111, No. 1, 1977

The technique for photographing discharges in  
obtaining a voltage pulse with a duration of 10-100 ns.  
Komet'kov, V.S. Izv. Akad. Nauk SSSR, Phys. Chem. 1977, No. 1,  
1977. Tensions of 500 kV with pulse duration of 10-100 ns  
of 90-100 cm were employed and a resolution of 10-100 cm  
with these discharges is provided. The results of the  
of the experiments show that for the apparatus used  
in the space it is not essential to use a vacuum  
the results by the existing methods. The results of the  
the large Aring in the space. The results of the  
of the results of the experiments.

KOMEL'KOV, V.S.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1899  
 AUTHOR KOMEL'KOV, V.S., PARFENOV, D.S.  
 TITLE The Broadening of the Spark Channel in Air at Amperages of about  
 2.10<sup>6</sup> Amperes.  
 PERIODICAL Dokl. Akad. Nauk, 111, fasc. 6, 1215-1218 (1956)  
 Issued: 2 / 1957

The spark channel investigated was created in an air interval on the occasion of the shock-like discharge of an electric circuit formed by 48 condensers at an operation voltage of 50 kilovolts and a total capacity of 132 microfarad. Investigations were carried out at a voltage of 40.000 V in the circuit, on which occasion up to 1,7.10<sup>6</sup> ampere was attained in the spark with an initial steepness of 10<sup>12</sup> ampere/sec. With 50.000 V in the electric circuit amperage attained 2.10<sup>6</sup> amperes. Measuring voltage and amperage is discussed. The broadening of the channel takes place in four characteristic phases which may easily be recognized on the attached photos and kerrograms. During the first phase, which sometimes has a duration of 0,7 microseconds, the channel broadens more rapidly than 2.10<sup>6</sup> cm/sec. The velocity then drops down to 4.10<sup>5</sup> cm/sec. In this stage current density attains the highest values of the entire discharge period (10<sup>7</sup> ampere/cm<sup>2</sup> and more). The discharge channel has a visible boundary during the first phase. In the second phase a new and washed out boundary appears. The boundaries of the outer zone are the direct continuation of the boundaries of the discharge in the first phase and propa-



V.S. KOMELKOV, (Yu E. Nesterikhin), (Yu.V. Skvortsov)

"CREATING OF STRONG DISCHARGES IN DEUTERIUM" by V. S. Komelkov,

Yu. E. Nesterikhin, Yu. V. Skvortsov

Report presented at 2nd UN Atoms-for-Peace Conference, Geneva, 9-13 Sept 1958

*KOMELKOV, V.S.*

KOMEL'KOV, V. S., MOROZOVA, T. I. and SKVORTSOV, Yu. V.

"Investigation of a Powerful Electric Discharge in Deuterium." (Work - 1954);  
pp. 170-184.

"The Physics of Plasmas; Problems of Controlled Thermonuclear Reactions." Vol. II.  
1958, published by Inst. Atomic Energy, Acad. Sci. USSR.  
resp. ed. M. A. Leontovich, editorial work V. I. Kogan.

Available in Library.

KOMEL'KOV, V. S. and SINITSIN, V. I.

"A Piezo-Electric Method of Investigating a Strong Gas Discharge." (Work - 1952);  
pp. 234-242.

"The Physics of Plasmas; Problems of Controlled Thermonuclear Reactions." Vol. I.  
1958, published by Inst. Atomic Energy, Acad. Sci. USSR.  
resp. ed. M. A. Leontovich, editorial work V. I. Kogan.

Available in Library.

AUTHOR: Komel'kov, V. S. SOV/56-35-1-2/59

TITLE: Self-Contracting Discharges in Deuterium in Currents  
Growing With High Velocity (Samoszhimayushchiyesya razryady v  
deyterii pri bol'shikh skorostyakh narastaniya toka)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,  
Vol. 35, Nr 1, pp. 16 - 26 (USSR)

ABSTRACT: Following earlier papers (Refs 1-3) dealing with the  
same effect at deuterium pressures of from  $10^{-3}$  to 1 torr  
and current rises of from  $5 \cdot 10^{10}$  to  $1,5 \cdot 10^{11}$ , the  
present article gives a very detailed report about plasma  
investigations carried out at from 0,1 to 10 torr and  
from  $7 \cdot 10^{11}$  to  $1,4 \cdot 10^{12}$  A/sec. The article includes 28  
original photographs of constricted pinched discharges,  
Kerr diagrams, and oscillograms. The experimental arrangement  
and the discharge spaces are described in detail, and so  
is the manner in which the experiments were carried out;  
these chapters were worked out with the collaboration of  
D.S.Parfenov, G.N.Aretov and B.P.Surnin. The discharge  
spaces had an inside longitudinal diameter of 194 - 196 mm,

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Self-Contracting Discharges in Deuterium in Currents  
Growing With High Velocity

SOV/56-35-1-2/59

but they had different heights and differently shaped electrodes (discharge vertical to the longitudinal axis). Thus, a "small chamber" of 47 mm height (Fig 2), a "large chamber" of 155 mm height, 123 mm distance between the electrodes, and a chamber with conical electrodes (Fig 8), which is shaped like a somewhat unsymmetrical reel of cotton are described. The outside diameter of the latter is 155 mm, the inside diameter (= distance between the electrodes) is 47 mm, and the longitudinal axis is 186 mm. The terminal surfaces of all discharge tubes were of glass; before these glass walls special windows were fitted for the photo-recording and Kerr-recording of the discharge. Three diagrams show the measuring results obtained with respect to the velocity of constriction in dependence on pressure and current rise, the discharge current during constriction (practically no agreement was attained between theoretical and experimental values), and, finally (Fig 16) the dependence of the maximum attainable gas temperature on pressure. A slightly exponential rise was found to

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Self- Contracting Discharges in Deuterium in Current  
Growing With High Velocity

SOV/56-35-1-2/59

occur with decreasing pressure; at 0,1 torr a temperature corresponding to nearly 200 eV is attained. In conclusion the author expresses his gratitude to M.A.Leontovich, Member, Academy of Sciences, USSR, and S.M.Osovetz for their valuable comments. There are 16 figures and 6 references.

SUBMITTED: February 6, 1958

Card 3/3



24.2110

10.2000

~~24 (3)~~

AUTHORS:

Komel'kov, V. S., Skvortsov, Iu. V.

68157

SOV/20-129-6-20/69

TITLE:

The Widening of the Channel of a Powerful Spark in a Liquid <sup>21</sup>

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 6, pp 1273 - 1276 (USSR)

ABSTRACT:

The authors investigated the primary stages of the widening of a spark channel in a liquid (first period of current passage), for it is just at this stage that high pressures and temperatures may be determined. The discharge occurred in water along the axis of a cylindrical transparent glass vessel. The circuit had a capacity of from 2.7 to 260  $\mu$ f, a voltage of  $U_0 = 20$  to 40 kv, and an inductance of  $L = 7 \cdot 10^{-6}$  to  $10^{-7}$  henries. Amperage and voltage at the spark channel were recorded by means of a pulsed oscilloscope of the type OK-17 M. The amperage amplitudes attained 720 ka, and the greatest steepness was  $2.1 \cdot 10^{11}$  a/sec. The motion of the shock-wave front in correspondingly weak discharges could be observed only if the chamber was illuminated by the light of an air discharger. In powerful discharges the motion of shock waves is distinctly visible. The

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The Widening of the Channel of a Powerful Spark in a Liquid SOV/20-129-6-20/69

spark channel widens considerably more slowly than the front of the shock wave. In the initial stage repeated breakdowns and the formation of from 2 to 4 parallel channels may be observed. Behind the wave front relatively weak disturbances are observed, which, for a certain time, move with the front of the main shock wave. A characteristic feature is the constancy of the velocity  $v_{sh}$  of the shock waves during the time of observation  $T/2$ . The same holds also for the spark channel, which widens with nearly constant velocity during the first semiperiod. The constancy of the shock-wave velocity may be explained by the energy transfer from the channel to the front by means of the small disturbances, the velocity of which, by the way, exceeds  $v_{sh}$ . With increasing maximum amperage  $i_m$  the following quantities increase:

- 1) Damping of amperage in the discharge circuit.
  - 2) The mean gradients in the channel in the first and second quarter of the period.
  - 3) The current density  $j(t)$ .
  - 4) The energy liberated in the channel during the first semiperiod. The energy transported away by the radiation of the channel in the visible part of the spectrum may be neglected for the here discussed estimations.
- The channel temperature is proportional to the energy of its

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The Widening of the Channel of a Powerful Spark in a Liquid SOV/20-129-6-20/69

unit of volume. In the strong sparks produced by the authors the temperature is at least 3.7 times as high as in the weak ones. Between the hot and the cold region there is apparently a layer of rather large excited particles, and the regions of conductivity differ noticeably from one another. The authors thank N. M. Kuznetsov for a useful discussion and for his advice. Reference is made to S. L. Mandel'shtam and N. K. Sukhodrev in this paper. There are 4 figures, 1 table, and 5 references, 4 of which are Soviet.

PRESENTED: August 2, 1959, by L. A. Artsimovich, Academician

SUBMITTED: July 10, 1959

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Card 3/3

KOMELKOV, V. S.    NESTERIKHIN, YU. E.    PERGAMENT, M. I.

Electron Optical High Speed Camera for the Investigation of Transient Processes.

report submitted for: The 5th International High Speed Photography Congress,  
Washington, D. C. 16-22 Oct., 1960.

VASIL'YEV, V.I., KOMEL'KOV, V.S., SEVORTSOV, Yu.V., TSEREVITINOV, S.S.

Stable dynamic current flux. Zhur. tekhn. fiz. 30 no.7:756-768  
Jl '60. (MIRA 13:8)

(Electrical discharges in gases)

KOMEL'KOV, V.S.

Development of a pulse discharge in a liquid. Zhur.tekh.fiz. 31  
no.8:948-960 Ag '61. (MIRA 14:8)  
(Electric discharges)

84725

10.8000 only 2307, 2407  
10.6121  
26.2311

S/057/60/030/010/004/019  
B013/B063

AUTHORS: Skvortsov, Yu. V., Komel'kov, V. S., and Kuznetsov, N. M.

TITLE: Expansion of a Spark Channel in a Liquid

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 10,  
pp. 1165-1177

TEXT: The work reported on here was conducted in the years from 1956 to 1958 and dealt with initial stages of expansion of a strong spark channel after breakdown. The electric circuit of the experimental setup (Fig. 2) is shown in Fig. 1, its design has been described in Ref. 6. Figs. 3 and 4 provide examples of oscillograms of voltage and discharge current. Some of the results obtained from the oscillograms are collected in Table 1. Oscillograms of current  $I(t)$  and voltage  $V(t)$  permit calculating the energy  $W$  liberated at a given instant:  $W(t) = \int_0^t I(t)V(t)dt$ .

Results obtained by such a calculation are given in Fig. 5 a,b; Fig. 6 illustrates the dependence of the initial rate of energy liberation  $W_n$  on the initial gradient  $i$  of the current. Fig. 7 shows the time dependence

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Expansion of a Spark Channel in a Liquid

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of current density  $j$  ( $\text{a/cm}^2$ ), Fig. 8 that of conductivity. The discharge pictures of Figs. 9 and 10 show three characteristic sections, namely, the spark channel, the shock wave front, and an intermediate region. Minor perturbations propagating from the channel to the shock wave front are distinctly discernible in the latter. The dependence of the channel radius  $r_k$  on time is shown in Figs. 9 and 11, while the modification of the radius of the shock wave front  $r_f$  in time is shown in Fig. 12. Table 2 contains values of  $V_k$  (expansion of discharge channel) and  $D$  (rate of motion of shock wave front) for various growths of current. A striking aspect is the little dependence of these quantities on the initial conditions in the discharge chain. Experiments have shown that the energy liberated in the spark channel, the pressure and the expansion rate of the channel, the velocity of the shock wave arising on a discharge in a liquid, mainly depend on the parameters of the discharge chain. The initial gradients in the channel attain  $10^4$  v/cm. Energy liberation is protracted over the whole half-period, and attains  $2.5 \cdot 10^4$  joules at  $\dot{i} = 2.10$  a/sec and  $t = \frac{T}{4}$ . At a steeper growth of current, the energy maximum in the unit volume of the channel shifts with time toward the beginning of spark

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Expansion of a Spark Channel in a Liquid

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development. It amounts to  $10^4$  joule/cm<sup>3</sup> for the mentioned parameters. Due to persistent energy liberation, the rates at which the channel expands and the shock wave propagates remain the same during 1 - 2 half-periods of the discharge current. The present paper gives a hydrodynamic calculation for the pressure field and for the velocities behind the shock wave front (Figs. 13, 14). At  $W_n = 3 \cdot 10^9$  joule/sec the peak pressure is  $2.8 \cdot 10^4$  in the channel, and  $2 \cdot 10^4$  atmospheres at the shock wave front. According to rough estimations the gas temperature in the channel attains several tens of thousands of degrees. The temperature peak in time shifts toward the beginning of discharge on a steeper growth of current. Fig. 15 shows the dependence of energy  $W$  released in the channel (joule/cm<sup>3</sup>) on time. The authors thank M. V. Zol'nikov, V. N. Dudorov, and P. T. Shevtsov for their assistance in the experiments. There are 15 figures, 2 table, and 10 references: 8 Soviet.

SUBMITTED: April 21, 1960

Card 3/3

Report presented at the 9th Intl. Conference on Ionization Phenomena in Gases, Munich, 20 August - 1 September 1964.

o. G. A. Belashenko, A. N. Belashenko, V. F. Belashenko and V. I. Velikoy

"Investigation of a Pulse Discharge in a Hollow Cylindrical Gas Circuit"

b. D. G. Belashenko and G. V. Velikoy

"Energy Measurements of Fast Electrons Formed During a Forward Pulse Discharge"

o. A. B. Belashenko, A. N. Belashenko, and G. V. Velikoy

"On a Method of Spectroscopic Investigation of the Hydrogen Discharge Circuit with Interference"

d. V. F. Belashenko and G. V. Velikoy

"On the Hydrogen Lines Emission in the Cathode Arc and Discharge Tube"

o. G. A. Belashenko, A. N. Belashenko, V. F. Belashenko, G. V. Velikoy

"An Investigation of Plasma Emission in the Hydrogen Discharge"

o. V. B. Belashenko, A. N. Belashenko, V. F. Belashenko, G. V. Velikoy

"Physical Current Cond"

o. N. N. Belashenko

"A Spectroscopically Studied State of Gases Following the Detachment of a Hydrogen Ion"

b. N. N. Belashenko, A. N. Belashenko, V. F. Belashenko

"Molecular Hydrogen Ionization by Gas Hydrogen Atoms"

o. I. P. Belashenko, G. V. Velikoy

"Investigation of Gases Ionized by Multi-charged Ions"

o. P. N. Belashenko, A. N. Belashenko

"The Source for Molecular Hydrogen Ion Formation at the Cathode"

o. A. L. Belashenko, V. F. Belashenko, V. P. Belashenko, G. V. Velikoy

"Injection of an Ion into the Gas Hydrogen Discharge"

o. V. F. Belashenko

"On Direct Emission of Particles from a Copper Single Crystal Sputtered by Incident with Ions"

KOMFLEKOV, V.S.



S/020/62/146/001/006/016  
B112/B108

AUTHOR: Komel'kov, V. S.

TITLE: A possible mechanism of the ejection of particles from the sun

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 1, 1962, 58 - 61

TEXT: The author describes the mechanism of the ejection of toroidal hydrodynamical vortices from the surface of the sun. The scheme of the process is shown in the figure. The conditions under which toroidal hydrodynamical vortices can be produced are discussed. Known experimental as well as theoretical data are referred to. In the second part, properties of the magnetic field, ejection velocity, ejection time, and the character of the emission are discussed. There are 2 figures.

PRESENTED: March 29, 1962, by M. A. Leontovich, Academician

SUBMITTED: February 20, 1962

Card 1/1

KOMEL'KOV, V.S.

A possible mechanism of the ejection of matter from the sun.  
Dokl. AN SSSR 146 no.1:58-61 S '62. (MIRA 15:9)

1. Predstavleno akademikom M.A. Leontovichem.  
(Sun--Prominences)

KOMELKOV, V. S., PERGAMENT, M. I., TSEREVITINOV, S. S., VASILYEV, V. I.,  
ARETOV, G. N.,

"The Structure of Plasmoids of Coaxial Injector,"

report presented at the 6th Intl. Conf. on Ionization Phenomena in Gases,  
Paris, France, 8-13 Jul 63

ACCESSION NR: AT4025288

S/0000/63/000/000/0010/0020

AUTHOR: Pergament, M. I.; Vasil'yev, V. I.; Komel'kov, V. S.; Tserevitinov, S. S.

TITLE: Investigation of infection and pinching of a plasma with the aid of an electron-optical time magnifier

SOURCE: Diagnostika plazmy\* (Plasma diagnostics); sb. statey. Moscow, Gosatomizdat, 1963, 10-20

TOPIC TAGS: plasmoid, plasma injection, plasma confinement, electrooptical effect

ABSTRACT: The injection and pinching of a plasma was investigated by means of an electron-optical "time magnifier" technique which was developed by the authors earlier (Trudy\* 2-go vsesoyuznogo soveshchaniya po vy\*sokoskorostnoy fotografii i kinematografii, Moscow, 1960, AN SSSR, 1963). A series of photographs was taken at a rate of  $10^5$  --  $5 \times 10^6$  frames per second and an exposure of  $5 \times 10^{-8}$  --  $5 \times 10^{-6}$  sec. The series consisted of 4, 8, or 16 frames spaced 0 --  $10^{-4}$  sec apart. Each frame measured  $5 \times 5$  mm and the resolution time was 30 pairs of lines per millimeter. The adjustment necessary to obtain optimal conditions of the "time magnifier" are described in detail. Some of the data obtained in the photographs are compared with oscillographic data. On the basis of an analysis of both the

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ACCESSION NR: AT4025288

photographs in the oscillograms it is suggested that the plasmoid consists of three principal parts: non-glowing highly ionized region, a region of intense impurity emission, and a region detached from the two walls, with bright deuterium lines, having a conical front. The latter region should have a low temperature, (i.e., weak ionization), because it does not crowd out the magnetic field well. These conclusions are confirmed by a study of the time variation of the intensities of the individual spectral lines at different points of the plasma loop, using a monochromator with a photomultiplier. The pinching of an injected plasma by rapidly growing fields and a study of a plasma injector based on the "gushing pinch" (V. S. Komelkov et. al., Proceedings Fifth International Conference on Ionization Phenomena in Gases, Munich, 1961, v. II. p. 2190, North Holland, Amsterdam, 1962) were also investigated by this technique and it is shown that it provides information not readily available by other means. Orig. art. has: 5 figures.

ASSOCIATION: None

SUBMITTED: 19Oct63

DATE ACQ: 16Apr64

ENCL: 00

SUB CODE: ME

NR REF SOV: 004

OTHER: 001

Card 2/2

S/057/63/033/003/020/021  
B104/B180

Komel'kov, V. S., Meylikhov, Ye. Z., and Pimenov, A. A.

Pulsed needle-shaped breakdown gaps in strong magnetic fields

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 33, no. 3, 1963, 373 - 374

TEXT: Pulsed magnetic fields with 50, 75 and 100 kilooersteds were produced in a single-turn steel coil by discharge from a 110  $\mu$ f. capacitor battery. The current period was 13.3  $\mu$  sec, the square voltage pulse length 0.3  $\mu$  sec and amplitude up to 15 kv. The discharge tubes were 25 and 3 mm diam with electrodes of molybdenum wire diam 0.8 mm. They were placed in the uniform magnetic field of the coil along or across the lines of force. The breakdowns were produced at pressures between 35 and 70 mm Hg, and the gap lengths were 3.4, 4.7, 5.0, 6.0 and 6.4 mm. Results show that even in strong magnetic fields where the Larmor radius of the electrons is half their mean free path the magnetic field hardly affects the discharge. This is attributed to the fact that the Townsend element

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S/057/63/033/003/020/021  
B/04/01/01

... breakdown is comparatively small.

L 9885-63 EPR/EPA(b)/EWT(1)/EEC(b)-2/ES(w)-2/BDS--AFFTC/ASD/  
SSD--Ps-4/Pd-4/Pab-4--WW/IJP(G)  
ACCESSION NR: AP3001332 S/0057/63/033/006/0719/0723

75  
74

AUTHOR: Komel'kov, V. S.; Skvortsov, Yu. V.; Tereshchenko, V. N.

TITLE: Directed shock waves in powerful sparks

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 6, 1963, 719-723

TOPIC TAGS: shock waves from sparks, directed plasma shock waves, plasma stream shock waves, plasma shock-wave generation

ABSTRACT: Discharge<sup>1</sup> of 600 kemp-current in the air at atmospheric pressure was investigated in order to create a directed movement of gas formed by a plasma "piston" in the required direction. The plasma piston in this case was realized by the use of rod-and-ring electrodes. A 130-microfarad condenser battery at 30 to 35 kv served as the energy source. The current period was 30 microseconds. The maximum diameter of the hot part of the plasma beam was about 6 cm; the coincidence of the shock wave front and the plasma was observed at about 15 cm from the electrodes. The maximum speed in the direction of the axis of the electrodes was  $1.38 \times 10^6$  cm/sec during the first half-period. Separation of the shock wave occurred at a front velocity of  $5.5 \times 10^5$  cm/sec. The gas temperature behind the front was estimated

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ACCESSION NR: AP3001332

roughly at 8000K. During the second half-period the speed of the luminescent front reached  $1.8 \times 10^6$  cm/sec. Analysis of the results indicates that the speed attenuation is much smaller in the axial than in the transverse direction and that the length of the beam exceeds the diameter of the ring electrode by 2 to 3 times prior to the separation of the shock wave. The intensities of the shock waves and the power from the input circuit can be increased substantially by the use of simple adapters to make the electrodes axially longer. Adapters 5 to 15 cm long, for instance, eliminated the radial bulging of the stream and concentrated the entire energy on acceleration and heating in the axial direction, while increasing the average current density in the stream. With 5-cm adapters, the speed of the shock front increased 1.5 to 2 times, while the length of the stream reached 36 cm. At a shock velocity of  $9 \times 10^5$  cm/sec the pressure and temperature in the front of the wave reached the values of 1000 atm and 14,000K. "The authors take this opportunity to express their gratitude to P. T. Shevtsov for help in the experiments." Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 17May62

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 009

OTHER: 000

Card 2/24/1

L 18860-63 EWT(1)/BDS/ES(w)-2 AFFTC/ASD/ESD-3/AFNL/IJP(C)/SSD Pub-1  
 ACCESSION NR: AP3005504 S/0057/63/033/008/0943/0944

AUTHOR: Komel'kov, V.S. ; Meylikhov, Ye.Z.

TITLE: Growth of negative Lichtenberg figures in nanosecond intervals

SOURCE: Zhurnal tekhnicheskoy fiziki, v.33, no.8, 1963, 943-944

TOPIC TAGS: Lichtenberg figure , point-plane discharge

ABSTRACT: Negative point to plane Lichtenberg figures were produced by 5 to 15 kV pulses lasting from 10 to 100 nanoseconds. The experiments were undertaken in the hope of obtaining information about electron velocities in strong non-uniform fields. The pulses were produced by a generator similar to that described by R.C.Fletcher (Phys.Rev., 76, 1501, 1949) and had rise and fall times not exceeding 4 nanosec. The figures were produced by a point electrode on a plane electrode covered with a photographic film. For pulse durations greater than about 20 nanosec the size of the Lichtenberg figures depended only on the potential and not on the pulse duration. For shorter pulses the size of the figure increased with the pulse length. Growth rates of the order of  $10^8$  cm/sec were observed. From these large growth rates and the absence of bright spark filaments, the authors conclude that the ionization me-

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ACCESSION NR: AP3005504

chanism cannot be simple electron avalanche formation. To investigate any delay in the onset of the creep discharge, figures were produced by 100 nanosec pulses with 0.2 nanosec risetimes and the surges in the electrode circuit were observed. With the point electrode touching the film no delays greater than 0.5 nanosec were found. With the point separated from the film by distances up to 0.2 mm, delays, increasing with the separation, up to about 20 nanosec occurred. When the space between the electrode and the film was illuminated by a mercury arc lamp, the delays were shorter and more uniform. Orig.art.has: 4 figures.

ASSOCIATION: none

SUBMITTED: 30Jul62

DATE ACQ: 06Sep63

ENCL: 00

SUB CODE: PH

NO REF SOV: 001

OTHER: 004

Card 2/2

1.49/20-65 EWT(1)/EPF(n)-2/ENG(m)/EPA(w)-2 Po-L/Pz-6/Pab-10/P1-L IJP(a)

ATS 00095

0010000

SAF. N. S.; Safronov, B. G.

plasma injectors. Interaction between plasmas and magnetic fields

1. Institut atomnoy energii. Doklady Akad. Nauk. Impul'snyye  
2. Vzaimodeystviye plazmenykh i magnetnykh pol'nykh polyami,

plasma, plasma injection, plasma pinch, plasma magnetic field in-  
to plasma

paper reviews research on plasma and magnetic fields, carried out in the USSR recently and  
-1. It is stated in the introduction that within some time  
the information on plasma injectors was concerned with the charac-  
the injectors themselves, present research is devoted primarily to  
plasma which determine the main processes and the properties of the  
research projects carried out at various institutions are briefly de-  
the names of the scientists in charge are given. It is stated in the

15/10/1995

that pulsed plasma injectors are still the only sources of high-  
 energy plasmas. They generate plasmas containing neutral ions. Various  
 kinds of the plasma of the impurities are discussed and the general con-  
 dition of neutral and slow ions in the plasma is  
 maximum purity can be attained by controlling the plasma distribu-  
 tion volume. The most efficient of the various axial in-  
 jectors producing "gushing" pinches is discussed. The nature of  
 the plasma, which move with velocities exceeding the speed of the  
 plasma, remains unclear, and the experimental results indicate that the  
 model used to describe acceleration in the plasma is not applicable.  
 The main results are: Introduction. I. Pulsed plasma injectors. 1. Coaxial  
 axial injector with plasma focusing. 2. Other types of injectors.  
 3. A source. II. Motion of plasmas in magnetic fields. 1. Motion  
 in longitudinal magnetic fields. 2. Motion in transverse fields by fast  
 longitudinal magnetic fields. 3. Interaction of plasmas with a trans-  
 verse field. Conclusions. Literature. Appendix. Figures.  
 Table.

Institut atomnoy energii im. V. V. Vukobratovskogo, Moscow, U.S.S.R.

AT5006095

ENCL: 00

REF CODE: ME, NP

OTHER: 015

ALEKSANDROV, G.N., kand. tekhn. nauk; KOMEL'KOV, V.S., doktor  
tekhn. nauk

[Discharge potentials of long air gaps and suspension  
insulators, 1961-1963] Razriadnye napriazhenia dlin-  
nykh vozdushnykh promezhutkov i girliand izoliatorov  
1961-1963. Moskva, 1964. 118 p. (MIRA 18:7)

1. Akademiya nauk SSSR. Institut nauchnoy informatsii.

KOMEL'KOV, V.S.; TSEREVITINOV, S.S.

High-speed photography of powerful discharges in gases.  
Usp.nauch.fot. 9:184-191 '64.

(MIRA 18:11)



ACCESSION NR: AP4009919

S/0057/64/034/001/0040/0052

AUTHOR: Nesterikhin, Yu. Ye.; Komel'kov, V. S.; Meylikhov, Ye. Z.

TITLE: Short gap pulse breakdown in the nanosecond range

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.1, 1964, 40-52

TOPIC TAGS: electric breakdown, pulse breakdown, uniform field breakdown, point to plane breakdown, electron avalanche, electron avalanche multiplication

ABSTRACT: Lag times were determined for uniform field breakdown and for point to plane breakdown in air at pressures from 16 to 110 cm Hg, gap lengths from 0.01 to 0.122 cm, and pulse voltages of up to 25 kV. The work differed from earlier work of R.C.Fletcher (Phys.Rev.76,1501,1949) chiefly in that greater resolution and steeper pulses were achieved, shorter gaps were employed, and the pressure was varied. Pulse rise times of the order of 0.2 nanoseconds were obtained with the aid of a pulse sharpening gap. The discharges were observed with an oscilloscope capable of  $5 \times 10^{-11}$  sec time resolution, and it was this that limited the precision with which the lag (time between pulse arrival and gap breakdown) could be determined. The uniform field breakdowns took place between 2 cm diameter electrodes having ap-

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ACC.NR: AP4009919

proximately the Rogovskiy shape. For the point to plane measurements, a sphere of 0.005 cm radius was employed with mercury arc illumination. A double periodicity was observed in the distribution of the lag times: only lag times occurred that were multiples of a certain characteristic time  $t_1$ , and those which were also close to multiples of a second much longer characteristic time  $t_2$  tended not to occur. The characteristic time  $t_1$  ranged from about 0.1 to 0.6 nanosec and decreased with increasing E/p. For uniform field breakdown, the characteristic time  $t_2$  also decreased with increasing E/p and was of the order of  $10t_1$ . The longer periodicity is said to be perceptible also in one of Fletcher's histograms. Possible causes for the observed periodicities are discussed at some length with no very firm conclusion being reached. Something of the order of  $10^4$  avalanches are required for breakdown. If fewer than these form initially, some sort of avalanche multiplication must occur, and this multiplication process may give rise to the periodicities. The authors favor avalanche multiplication by photoelectric effect at the cathode as in the avalanche chains observed by W.Franke (Zs.f.Phys., 158, 96, 1960). The characteristic time  $t_1$  would be the time  $t_A$  required for an avalanche to develop to the critical size. In an appendix, the avalanche development time  $t_A$  is calculated with space charge effects taken into account. The calculated development times are compared with characteristic times  $t_1$  observed in the present work and with lag times ob-

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ACC.NR: AP4009919

served by Fletcher with illuminated electrodes. Adequate agreement is shown. "The authors consider it their duty to mention the fruitful participation of B.V.Artemov in the early stages of this work." Orig.art.has: 23 formulas, 14 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 13Sep62

DATE ACQ: 10Feb64

ENCL: 00

SUB CODE: PH

NR REF SOV: 002

OTHER: 012

Card 3/3

ACCESSION NR: AP4040296

S/0057/64/034/006/0965/0973

AUTHOR: Skvortsov, Yu.V.; Komel'kov, V.S.; Tserovitinov, S.S.

TITLE: Structure of the magnetic fields in a plasma jet with internal currents

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.6, 1964, 965-973

TOPIC TAGS: plasma, plasma jet, plasma magnetic field interaction

ABSTRACT: This paper reports results of investigations conducted from 1959 to 1961 concerning the magnetic fields and currents in plasma jets. The jets were produced by discharge of a 130-microfarad capacitor bank at 5 to 30 kv between two coaxial cylindrical electrodes 2 cm long, 3 cm in external diameter, and 18 cm in internal diameter, respectively. The period of the electrical system was 22 microsec. The electrodes were located at one end of and coaxial with a glass tube 1 m long and 19 cm in diameter containing hydrogen at a pressure of 0.5 to 10 mm Hg. All three components of the magnetic field were measured with movable probes, and high-speed frame and streak photographs were made. Extensive data were collected and are discussed in considerable detail. The velocity of the plasma jets was about  $7 \times 10^6$  cm/sec and did not vary greatly with changing gas pressure and discharge potential.

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ACCESSION NR: AP4040296

The current in the jet was limited to a region within 4 cm of the axis of the tube. A remarkable feature of the current distribution was the appearance within the jet of a helical filament carrying a considerable fraction of the current. The radius and pitch of this helix were both about 2 cm, and its existence was shown both by the behavior of the magnetic field and by the high-speed photographs. Optical phenomena due to this helical current have sometimes been misinterpreted as indicating the formation of a number of successive plasma bursts (I.F.Kvartskhava, R.D.Meladze and K.V.Suladze, ZhTF 30,289,1960). "In conclusion, the authors thank D.I.Vasil'yev and M.V.Zol'nikov for assistance in performing the experiments, and V.Strizhanova for laying out the graphs and drawings." Orig.art.has: 7 formulas, 9 figures, and 2 tables.

ASSOCIATION: none

SUBMITTED: 09Jul63

SUB CODE: ME

ATD PRESS: 3082

ENCL: 00

NR REF SOV: 014

OTHER: 007

Card 2/2

ACCESSION NR: AP4041993

S/0057/64/034/007/1191/1198

AUTHOR: Aretov, G.N.; Vasil'yev, V.I.; Komol'kov, V.S.; Pergament, M.I.; Tserovitinov, S.S.

TITLE: The structure of plasma bursts from a coaxial plasma gun

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.7, 1964, 1191-1198

TOPIC TAGS: plasma, plasmoid, plasma gun, plasma diagnostics

ABSTRACT: The plasma bursts ejected by a coaxial plasma gun were examined with a battery of diagnostic devices, and the results are presented and discussed in some detail. The plasma gun was similar to that described by J.Marshall (Phys.of Fluids 3,134,1960) and employed electrodes 3.2 and 7.0 cm in diameter and 31 cm long. Deuterium was admitted through openings in the inner electrode located 17 cm from the output end of the gun. The gun was powered by a 50 microfarad capacitor bank charged in most of the experiments to 5 kV. The inductance of the system was 40 cm, the oscillation period was 11.4 microsec, and the peak current was 110 kA. The plasmas were observed in a 10 cm diameter 80 cm long glass drift tube. The energy distribution, both transverse and longitudinal, was measured with calorimeters. The thermal

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APPROVED FOR RELEASE: 06/13/2000

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ACCESSION NR: AP4041993

probe for measuring the longitudinal energy distribution employed a 6 micron thick platinum foil. The distortion of a local 100 to 200 Oe magnetic field by the passage of the plasma was observed, and in other experiments the longitudinal magnetic field of the plasma was recorded in the absence of external fields. The conductivity was estimated from the rate of diffusion into the plasma of a longitudinal magnetic field filling the drift tube. The plasma was probed with 4 mm microwaves. The total radiation in the visible and near ultraviolet was recorded, and the time variation of the intensity of separate spectrum lines was observed. High speed photographs were made at the rate of  $10^6$  frames per second. These photographs were made both with the general radiation and with  $D_\beta$  radiation. The plasmoids were found to consist of three distinct portions which became spatially separated during the drift because of their different velocities. The most rapid portion (velocity up to  $3 \times 10^7$  cm/sec), in which the particle density reached  $2 \times 10^{15}$  cm<sup>-3</sup> and the electron temperature reached 6 eV, was non-luminous and consisted of pure almost completely ionized deuterium. Following the pure deuterium region was a less dense less rapid impurity zone in which line of carbon and copper were observed. Finally came a slower ( $6 \times 10^6$  cm/sec), dense, intensely luminous region containing considerable un-ionized gas. The charged particle density in this region was  $5 \times 10^{15}$  cm<sup>-3</sup>. "The

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PERGAMENT, M.I.; NESTERIKHIN, Yu.Ye.; KOMEL'KOV, V.S.

Electron optical high-speed motion-picture cameras for the  
study of fast events. Usp.nauch.fot. 9:64-71 '64.  
(MIRA 18:11)

L 11062-66 EWT(1)/EWA(h)

ACC NR: AT6001387

SOURCE CODE: UR/3180/64/009/000/0072/0075

AUTHOR: Butslov, M. M.; Komel'kov, V. S.; Nesterikhin, Yu. Ye.

ORG: none

TITLE: Electron-optical instrument for studying changes in the half-width and intensity of spectral lines with time

SOURCE: AN SSSR. Komissiya po nauchnoy fotografii i kinematografii. Uspekhi nauchnoy fotografii, v. 9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 72-75 and insert facing page 80

TOPIC TAGS: image converter, spectral line

ABSTRACT: The article describes the design and testing of a dual converter, in which the recording of the glow intensity and dimensions of the image is based on the oscillograms of the input current of the photomultiplier. The test results confirm the principle and design of the instrument and indicate that an instrument with better parameters can be constructed. The tested instrument can be used for recording processes lasting 500-1000  $\mu$  sec. To improve the resolving time, it is necessary to increase the amplification factor of the instrument by two orders of magnitude and to use a fast multiplier with a current linearity up to 50-100 ma and a time resolution of  $1-5 \times 10^{-8}$  sec. To increase the space resolution, the resolving power of the image

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ACC NR: AT6001405

SOURCE CODE: UR/3180/64/009/000/0184/0191

AUTHOR: Komel'kov, V.S.; Tserevitinov, S.S.

ORG: none

TITLE: High speed photography of strong gas discharges

SOURCE: AN SSSR. Komissiya po nauchnoy fotografii i kinematografii. Uspekhi nauchnoy fotografii, v. 9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 184-191 and inserts facing pages 184, 185, 192, and 193

TOPIC TAGS: high speed photography, gas discharge, electrooptic photography, Kerr cell

ABSTRACT: For the study of pulsed current discharges (up to  $2 \cdot 10^6$  A) with oscillation frequencies from 10 — 100  $\mu$ sec the authors made extensive use of fast-electron photoregisters and Kerr cells. The article describes devices, auxiliary equipment, and methods used during high-temperature plasma investigations by means of Soviet instruments. A discussion is given on photography by means of high-speed photoregistering devices including light generating, synchronization, and registration devices and their operation; and Kerr cell photography, including various optical systems and Kerr cell control circuitry. Authors thank their research associates G. N. Aretov, Ye. V. Borisenko, V.I. Vasil'yev, D.S. Parfenov, Yu. V. Skvortsov, and B. P. Surnin who participated in the experiments and in the development of some of the equipment used. Orig. art. has: 13 figures.

SUB CODE: 14, 20 / SUBM DATE: none / ORIG REF: 005

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3/11/64/034/010/1790/1787

17.15.0V, Yu. V.; Komel'kov, V. S., Izvestiya

aciation from plasma jets

\* Zhurnal tekhnicheskoy fiziki, v.34 no.10, 1984 1790-1797

KEY WORDS: plasma jet, plasmoid, plasma temperature, plasma radiation, x-ray emis-

The optical and x-radiation from plasma was produced by a short-electrical accelerator were examined. The apparatus has been described elsewhere (see, V.S. Komel'kov, Yu.V. Skvortsov and S.I. Tserevinskiy, ZhTF 30, 756, 1960). The source contained hydrogen at 0.1 to 1 mm Hg. Currents from 200 to 550 kA and of 22 microsec were obtained by discharging a 30 microfarad capacitor charged to 10 to 30 kV. The spectrum from 2000 to 5000 Å was investigated by three spectrographs. Several line widths were measured with a dispersion time-resolved spectra (resolution 0.36 microns) in the region from 4500 Å were recorded with the aid of a rotating mirror. These spectra were observed in regions located 4 to 10 cm from the electrodes. Monochromatic streak

REF ID: A64046338

The electron temperature was estimated to be considerably lower; around 0.4 eV. Two distinct groups of x-rays were observed. The first occurred at the beginning of the discharge, originated at the central electrode, and lasted only 0.3 μsec. The quantum energy of these x-rays corresponded to the potential to which the cathode had been charged. The second group appeared only when the cathode reached its maximum and lasted about 10 μsec. The mean energy of these x-rays was 80 keV, and quantities of γ-rays were present. These

hard x-rays originated in or near the plasma filament at the axis of the tube. Possible mechanisms by which the electrons might have been accelerated to the corre-

sponding energies were probably  
the magnetic field.  
The V. Zolnikov  
drawing the  
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ENCL: 1

OTHER: 011

L 46324-66 EWT(1) IJP(c) AT

ACC NR: AT6015887

SOURCE CODE: UR/3136/65/000/M16/0001/6015

AUTHOR: Vasil'yev, V. I.; Komel'kov, V. S.; Tserevitinov, S. S.

ORG: Institute of Atomic Energy im. I. V. Kurchatov (Institut atomnoy energii)

TITLE: Longitudinal <sup>s</sup>motion of plasmoids in magnetic fields

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-1016, 1965. Prokhozhdeniye plazmennyykh sgustkov cherez prodol'nyye magnitnyye polya, 1-15

TOPIC TAGS: plasmoid, pulsed magnetic field, plasma gun, electron temperature, ion temperature, plasma density, deuterium ~~plasma~~

ABSTRACT: The structure of deuterium plasma generated in a coaxial gun and injected longitudinally into a pulsed magnetic field is studied with the aid of thermal and diagnostic probes, a mass spectrograph and a monochromator. These probes are used to determine the velocity of the plasma, the sum of the electron and ion temperatures, spectroscopic diagnostics and particle energy distribution. In addition, 4 mm microwaves were used to determine the boundaries of the plasma. It was found that pulsed fields of 15 kG are sufficient to stop plasma of up to  $2 \cdot 10^{15} \text{ cm}^{-3}$  density moving with a velocity of  $2 \cdot 10^7 \text{ cm/sec}$ . On the basis of the experimental events, the equipment was programmed to sever the tail-end of the plasma which carries most of the impurities; this resulted in the production of plasmoids of high purity and relatively high density. Some limitation on the rate of rise of the pulsed magnetic field was requir-

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L 46324-66

ACC NR: AT6015887

ed to prevent wall breakdowns and this increased the impurity content of the plasma.  
The experimental results were found to be in good agreement with theoretical estimates.  
Orig. art. has: 4 figures, 1 table.

SUB CODE: 20/

SUBM DATE: none/

ORIG REF: 010/

OTH REF: 006

Card 2/2 fv

KOMENDA, BOHUMIR.

Priekopníci noveho poľnohospodárstva. Bratislava, Statne  
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DA Not in DLC

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Praha, Statni zemedelske nakl., 1955. 148 p. (Vzory naseho zemedelstvi)  
[The application of Surikov's method leads the collective farm in Svihov  
toward wealth. 1st ed.]

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Electrostatic spraying of loudspeakers. Stro! vyr 12 no.2:102-105  
164.

1. Tesla, n.p., Vlasako Mezirici.



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3649 Photomastic (Eastman Kodak Co. 4-15-54)  
with quercetin. 1. Komenda (Chem. Abstr. 1953  
47 (4), 531-533). Quercetin reacts with  $\text{UO}_2$   
with the formation of a rusty-brown stable colora-  
tion. Maximum absorbance is achieved at pH 7.  
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of 1.0% of  $\text{NaNO}_2$  in 0.1N HCl, and developing the chro-

KOMENDA, J.

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July 1955

SOURCE: East European Accessions List, (EEAL), Library of Congress  
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The influence of blank absorption on the precision of photoelectric measurements. Jaro Komenda (Katedra teor. fys. chem. přírodovědecké fak. Brno, Czech.). Chemis (Prague) 10, 831-8 (1968). In the simplified case of 2 wave lengths  $\lambda$  and  $\lambda'$  for which light intensity  $I_0 = aI_1$  and absorbancies of estd. substance  $E_1' = bE_1$ , the nonmonochromatic character of the light source leads to deviation from the Lambert-Beer law for the over-all absorbancy  $E_1 = \log(1 + a)/(10^{-a}/a10^{-b})$ . If a substance giving rise to blank absorption (for which  $E_1' = dE_1$ ) is present and the sample measured against the blank as zero reading, over-all extinction  $E_1 = \log(10^{-a_1} + a10^{-a_2})/[10^{-(a_1 + a_2)} + a10^{-a_2} + 4.343]$  which is evidently different from  $E_1$  unless  $d = 1$ . If the blank absorption is due to the presence of the estd. or similar substance in the reagents, this source of error can be eliminated by measuring blank  $E_1$  against pure solvent, obtaining the corresponding concn. from the standard curve, and subtracting it from the result. Similar correction also applies if the nonvalidity of Lambert-Beer law is due to inaccuracies of the optical or elec. parts of the app.

I. M. FINE